BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Revision of Part 15 of the Commission's	)	ET Docket No. 98-153
Rules Regarding Ultra-Wideband	)	
Transmission Systems	)	

PETITION FOR RECONSIDERATION OF AERONAUTICAL RADIO, INC. AND THE AIR TRANSPORT ASSOCIATION OF AMERICA, INC.

Aeronautical Radio, Inc. ("ARINC") and the Air Transport Association of America, Inc. ("ATA"), by their attorneys, hereby petition the Federal Communications Commission ("Commission" or "FCC") for partial reconsideration of *First Report and Order* in the above referenced docket.[1]

INTRODUCTION

In their comments filed in this proceeding in 2000 and 2001, ARINC[2] and ATA[3] expressed concerns about the potential for ultra-wideband ("UWB") devices to cause harmful

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[1] *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, ET Docket No. 98-153, FCC 02-48 (rel. April 22, 2002). The *First Report and Order* was published in the Federal Register on May 16, 2002, 67 Fed. Reg. 34852. Therefore, this petition for reconsideration is timely.

[2] ARINC is the communications company formed by the air transport industry at the suggestion of the Federal Radio Commission, the predecessor to the FCC. ARINC has provided radio communications services and spectrum management to domestic and international aviation for more than seventy years. In spectrum matters, ARINC is advised by the Aeronautical Frequency Committee ("AFC"), which is composed of representatives of air carriers, business aviation, general aviation, and helicopter operators. Members of the AFC include

interference to Global Positioning Systems ("GPS") and other critical aviation and safety-of-life communication systems, many of which operate in the restricted bands. ARINC and ATA were joined by many other commenters in urging the FCC to act with caution.

ARINC and ATA were pleased to see that the FCC in the *First Report and Order* sought to take a conservative approach in introducing unlicensed UWB devices into spectrum used by licensed operations. From a policy perspective, this is the only sound posture regarding these untested and unproven devices, particularly with respect to spectrum used by GPS and other critical safety-of-life and aviation systems.

Indeed, among other aspects of the decision, ARINC and ATA are reassured that the FCC intends to prohibit the operation of *all* UWB devices on board aircraft. *First Report and Order*, Appendix D, new 47 C. F. R. § 15.521 (a).[4] In the absence of a far more detailed understanding of UWB devices, and their emissions characteristics, this approach is prudent and should remain

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representatives of Aircraft Owners and Pilots Associations ("AOPA"), America West Airlines, American Airlines, Continental Airlines, Delta Air Lines, Federal Express, Helicopter Association International ("HAI"), National Business Aircraft Association ("NBAA"), Northwest Airlines, United Airlines, United Parcel Service, and US Airways. ATA, the International Air Transport Association ("IATA") and the Federal Aviation Administration ("FAA") also send non-voting participants.

[3] ATA is the principal trade and service organization of the major scheduled air carriers, both passenger and cargo, in the United States. ATA was formed to represent the interests of its members before Congress, federal agencies, state and local governments, and federal and state courts. Its twenty-two members account for more that 95% of the passenger and cargo air carrier traffic flown annually on U.S. scheduled airlines. In 2001, ATA members had nearly 6.7 million departures and carried nearly 547 million passengers. ATA was founded in 1936. ATA's members are Airborne Express, Alaska Airlines, Aloha Airlines, America West Airlines, American Airlines, American Trans Air, Atlas Air, Continental Airlines, Delta Air Lines, DHL Airways, Emery Worldwide, Evergreen International, Federal Express, Hawaiian Airlines, JetBlue Airways, Midwest Express Airlines, Northwest Airlines, Polar Air Cargo, Southwest Airlines, United Airlines, United Parcel Service, and US Airways. Associate members are Aerovias de Mexico, Air Canada, KLM-Royal Dutch Airlines, and Mexicana de Aviacion.

[4] However, as explained *infra*, ARINC and ATA share several concerns regarding the effectiveness of this prohibition.

in place and even be reinforced, as explained below. To date there has been virtually no experience with real world operation of UWB devices; and, until substantially more is known, the FCC should continue to proceed deliberately. ARINC and ATA applaud the FCC's circumspection in this matter.[5]

Similarly, the FCC took appropriate steps, based on the limited information available to it, to safeguard against interfering emissions in the band 960 MHz to 1.99 GHz, which contain the critical GPS bands 1164-1240 MHz and 1559-1610 MHz. Specifically, the FCC prohibited all UWB devices with UWB bandwidths falling between 960-1990 MHz. Further, the FCC adopted average radiated emissions limits in the two GPS bands identified above more stringent than those applying to radiated emissions from UWB devices generally. Again, ARINC and ATA at this time believe that these measures should provide an acceptable front-line level safeguard against harmful interference from UWB devices, coupled with enforcement of the general prohibition against harmful interference to GPS and other licensed services.[6] For radionavigation and safety-of-life services -- such as those ARINC and ATA urge the Commission to protect -- harmful interference is present when the interference simply "endangers the functioning" of the service. This is a lower threshold of "harmful interference" than that which applies to licensed operations generally. Accordingly, the highest measure of protection must be afforded to aviation services.

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[5] Notably, a recent test conducted of a hand held UWB device on a United Airlines aircraft at the UWB power levels set by the *First Report and Order* caused serious interference to the Instrument Landing System localizer. Jeff Silva, "UWB may interfere with airline gear," RCR Wireless, June 10, 2002.

[6] 47 C. F. R. §15.5.

PETITION FOR RECONSIDERATION

1. *Bands of Operation.* Notwithstanding the restrictions discussed above, the *First Report and* Order was not sufficiently conservative when designating the permissible bands of UWB operation in light of the modicum of information about what UWB devices will be deployed, to what uses they will be put, what their emissions characteristics will be, and how many there will be. Precious little testing has been done to date, and much of that was – understandably so -- accomplished with simulators. Almost no real-world experience is available with production UWB devices. As ARINC and ATA discussed in their Comments and Reply Comments in this matter,[7] *5.5 GHz* is a more appropriate lower threshold than the1.99 GHz adopted in the new rules (with the exception of terrestrially based imaging systems subject to coordination). This limit is necessary until more is known about the characteristics, proliferation, and operation of UWB portable and handheld devices so as to protect critical aviation operations falling between 2 and 5.5 GHz: Aeronautical Telemetry (2.31-2.39 GHz); Airport Surveillance Radars (2.7-2.9 GHz) Radio Altimetry (4.2-4.4 GHz); Airborne Weather Radars (2.9-3.0, 5.0-5.25, and 5.35-5.47 GHz); and Microwave Landing System (5.0-5.25 GHz).

Therefore, ARINC and ATA urge the Commission on reconsideration to permit indoor, portable and hand held consumer devices that incorporate UWB components only with UWB bandwidths *above 5.5 GHz*.[8] Further, the average radiated emissions limits between 3100 and

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[7] *See* Comments of ARINC and ATA, ET Docket No. 98-153, at 4 (filed April 25, 2001); Reply Comments of ARINC and ATA, ET Docket No. 98-153, at 6-7 (filed October 27, 2000).

[8] *See* concerns regarding handheld and portable devices inadvertently operated on aircraft despite Section 15.521(a), *infra*.

5500 MHz in the new rules should be lowered to at least -51.3 dBm for indoor UWB devices and -61.3 dBm for hand held UWB devices.[9]

2. *Coordination of Imaging* Systems. ARINC and ATA appreciate the benefits that UWB devices may bring, and do not seek to stifle those benefits. Accordingly, ARINC and ATA do not challenge the permission that the FCC gave for the operation of certain low frequency imaging systems below 960 MHz as well as imaging systems above 3.1 GHz. ARINC and ATA applaud the Commission for maintaining the certification requirement,[10] applying part 90 eligibility criteria to parties operating imaging systems, and adopting a coordination requirement for all imaging systems that applies both before use and before transfer of these UWB systems to other qualified users.[11] However, certain adjustments to the coordination program should be made if it is to be a useful tool for enforcing compliant operation of UWB devices and for facilitating steps to mitigate interference once these systems have been deployed. ARINC and ATA request that the FCC clarify Section 15.525 to provide for quick access to coordination information by licenses and users of licensed services, including but not limited to GPS. Expeditious access to data regarding UWB device users is necessary to enable enforcement of non-interference requirements especially where interference could adversely impact the operation of aviation and safety-of-life systems. Coordination information should be promptly posted on the World Wide Web.

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9 *See* Appendix D, §§ 15.517(c) and 15.519(c). These changes would bring the emissions limits applicable for these devices in the 3.1 to 5.5 GHz band in line with those that apply between 1.99 and 3.1 GHz. *Id*.

10 *First Report and Order*, ¶ 48.

11 Appendix D, § 15.525.

3. *Enforceability of Prohibition of UWB Devices Operating on Aircraft*. As noted earlier, the new rules prohibit operation of all UWB devices on airplanes. Unfortunately, there is little to prevent inadvertent operation by passengers who use devices that, unbeknownst to them, have UWB devices within them, such as laptop computers, cameras, or PDAs. At a minimum, to address this potential for interference, the FCC should require all devices containing UWB components to be clearly and conspicuously labeled "WARNING: NOT FOR USE ON AIRCRAFT." This is particularly important with respect to those consumer-oriented devices that would be permitted under Sections 15.517 (*e.g.,* communications devices) and 15.519 (hand held devices). Operation manuals should contain distinct warnings about operation on aircraft as well. These measures in and of themselves may not prove sufficient, but they are a necessary step if UWB devices are permitted for use in consumer products. The Commission must ensure that its Section 15.521(a) prohibition is meaningful and enforceable.

4. *Future Consideration of Rule Changes*. In the *First Report and Order*, the FCC indicated that by the middle of 2003, if not sooner, it intended to explore "more flexible technical standards" and to consider permitting the deployment of "additional types of UWB operation and technology."[12] Given the controversial nature of this proceeding, the very limited testing to date, and the total lack of experience with "production" UWB devices, it would not be sound public policy to jump into a consideration of increased flexibility in this area, or even to promise that such flexibility will be considered pursuant to a specified timetable. There is still considerable, justified concern within the aviation industry about the sufficiency of the rules adopted as testing

[12] *First Report and Order*, ¶1.

for UWB interference potential vis-à-vis many critical aviation systems has not yet occurred.[13] Consequently, there is every reason for the FCC to take a longer view and proceed cautiously. The Commission can proceed to introduce flexibility after sufficient experience is obtained and testing with production devices is conducted, *if such flexibility proves warranted*. Otherwise, the properly "conservative" approach taken by the Commission in the *First Report and Order* will prove ephemeral. The FCC should, therefore, clarify the *First Report and Order* to state that after sufficient experience is gained with the new rules and products built in compliance with them, it may then be appropriate to consider whether adjustments to the regulations are necessary to increase the availability of UWB technology and devices, provided that any such adjustments are consistent with the non-interference requirements of unlicensed operation and with the imperatives of protecting safety-of-life services.

ARINC and ATA are equally concerned that the FCC engage only in a public testing program to consider or justify any possible future rule changes. Earlier in this proceeding, NTIA and others engaged in a relatively public series of tests. Any future testing should follow this

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[13] For example, there has been very limited or no testing with respect to the aviation systems described earlier in the bands 2.0-5.5 GHz. In addition, there has been no testing of aviation systems below 400 MHz, where the FCC has decided to permit emissions up to the general part 15 limits. Some of the aviation systems below 400 MHz are:

Aeronautical Mobile (R) HF (2-22 MHz);
Marker Beacons (74.8-75.2 MHz);
Ground Based Augmentation Systems (108-117.975 MHz);
VHF omni-directional range (112-117.95 MHz);
Instrument Landing Systems (108-117.95 and 328.6-335.4 MHz (glide slope);
Aeronautical Mobile (R) communications (117.95-137 MHz); and
Military Aviation communications (225-328.6, 335-400 MHz).

Care must be taken both in terms of monitoring actual operations as well as any future testing to ensure that hand held, portable, and other mass-produced UWB devices authorized

model. Perhaps most important, any tests the FCC or other government agency intends to conduct on UWB interference potential should be subject to public scrutiny, even in the planning stages.

CONCLUSION

For the foregoing reasons, the FCC's *First Report and Order* should be reconsidered and clarified as discussed herein. Most significantly, except for imaging systems as authorized under the new regulations, UWB devices should not, at this time, be permitted to have UWB bandwidths that fall below 5500 MHz. The FCC properly took a conservative approach in deciding to permit a broader deployment of UWB devices than has heretofore been permitted.

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under the FCC's new rules do not generate potentially interfering levels of emissions in these bandwidths.

The Commission should be applauded for allowing the public to begin to receive some of the benefits UWB technology has to offer, but it should continue to use caution in light of the potential impact on GPS and aviation safety-of-life and other critical in-flight operations. Any future consideration of changes to the Commission's rules to permit a widespread deployment of UWB devices in the spectrum should be made only after sufficient experience is gained with the new regulations (as modified or clarified as discussed herein) and appropriate public testing is conducted.

Respectfully submitted,

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